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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,711	10/17/2003	Xiaoming Ren	107059-0037	2198
24267 7590 03/08/2007 CESARI AND MCKENNA, LLP 88 BLACK FALCON AVENUE BOSTON, MA 02210			EXAMINER TOOMER, CEPHIA D	
			ART UNIT	PAPER NUMBER
			1714	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/08/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

**Application No.**

10/688,711

**Applicant(s)**

REN ET AL.

**Examiner**

Cephia D. Toomer

**Art Unit**

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 05 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☐ Claim(s) 1-25,27,28,31 and 32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24 is/are allowed.
- 6) ☒ Claim(s) 1-4,6-8,10,11,14-16,22-25,27,28 and 31 is/are rejected.
- 7) ☒ Claim(s) 5,9,12,13,17-21 and 32 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

This Office action is in response to the amendment filed December 5, 2006 in which claims 1, 22, 24, 27, 28, 31 and 32 were amended.

The rejection of the claims under 35 USC 112, second paragraph is withdrawn in view of the amendment to the claims.

#### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 27 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant amended the claims to delete the language "an effective amount". By making this change to the claims, the language "of a metal hydride" is confusing. Clarification and correction are required.

#### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. Claims 1, 14-16, 22, 23 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 0021771 with Rohde (US 6,604,598) as the English translation.

5. WO (Rohde) teaches a flame coloring additive comprising an alcoholic solution. The alcohol may be methanol and the flame coloring additive may be trimethyl borate, trimethyl borate or mixtures thereof (see abstract; col. 2, line 66 through col. 3, lines 1-7). The flame coloring additive is present in an amount from 0.1 to 5% by weight (see col. 3, lines 8-12). Since more than one flame coloring additive may be present, WO meets the limitations of the claims with respect to the dye.

Accordingly, WO teaching all the material limitations of the claims anticipates the claims.

6. Claims 1, 27 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Finkelshtain (US 20020083640).

Finkelshtain teaches a fuel for fuel cells comprising methanol as the primary fuel and metal hydrides or hydrazine as the auxiliary fuel (see abstract; paragraphs 34 and 35). Finkelshtain teaches that a mixture of the auxiliary fuels may be employed (see claim 5).

Accordingly, Finkelshtain teaching all the material limitations of the claims anticipates the claims.

7. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Mayerhoffer (US 3,869,262).

Mayerhoffer teaches a fuel composition comprising methanol and methylal (dimethoxymethane).

Accordingly, Mayerhoffer teaching all the material limitations of the claims anticipates the claims.

8. Claims 1-4, 6-8, 22, 23, 25 and 31 are rejected under 35 USC 102(b) as being anticipated by JP 2001-093558.

JP teaches a fuel for fuel cells comprising methanol (see abstract; paragraph 0017), 0.01-10,000 ppm of a coloring agent (paragraphs 0027 and 0032), 0.001-50% of combustion improvers such as methyl formate and methylal (dimethoxymethane) (see paragraphs 0034-0040).

Accordingly, JP teaching all the limitations of the claims anticipates the claims.

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-3, 10, 11, 22 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (US 6,864,001).

Zhang teaches using tetramethyl orthocarbonate as a fuel for fuel cells (see abstract). Zhang teaches that it is known to use methanol and dimethoxymethane as fuels for fuel cells (see col. 2, lines 30-63). Zhang teaches the limitations of the claims other than the differences that are discussed below.

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In the first aspect, Zhang differs from the claims in that he does not specifically teach a composition wherein methanol and tetramethyl orthocarbonate are present. However, it is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose. The idea of combining them flows logically from their having been individually taught in the prior art. In *re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980).

In the second aspect, Zhang differs from the claims in that he does not specifically teach the claimed proportions. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the proportions of the components through routine experimentation for the best results. As to optimization results, a patent will not be granted based upon the optimization of result effective variables when the optimization is obtained through routine experimentation unless there is a showing of unexpected results which properly rebuts the *prima facie* case of obviousness. See *In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980). See also *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (Fed. Cir. 1990), and *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

### ***Response to Arguments***

11. Applicant's arguments have been fully considered but they are not persuasive.

Applicant argues that Rohde does not relate to a fuel for use with a direct oxidation fuel cell and that the Rohde coloring additive is not an additive which is a fuel precursor that undergoes a reaction with water to produce small molecules.

The claims are directed to a composition and the language "for a direct methanol fuel cell" is an intended use for the composition and is not read as a patentable limitation. Note that, if the body of a claim fully and intrinsically sets forth all of the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention's limitations, then the preamble is not considered a limitation and is of no significance to the claim construction. See MPEP 2111.02. The examiner asserts that Rohde containing the same components in the same proportions as recited by the instant claims and thus, anticipates the claims.

With respect to the additive of Rohde not being a fuel precursor that reacts with water, the examiner asserts this is not a limitation but is instead a characteristic of the additive. Since Rohde teaches the same additive, the additive of Rohde would inherently possess this characteristic.

Applicant argues that Finkelshtain uses the metal hydride as an actual fuel and uses methanol as a protectant, whereas Applicant includes the metal hydride for the purpose of water uptake and additional fuel production.

It is irrelevant as to why Finkelshtain uses the metal hydride and methanol. Finkelshtain uses the same compounds as Applicant in a fuel composition and these compounds and composition anticipates the claims of the present invention.

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Applicant argues that Mayerhoffer is not related to direct oxidation of fuel cells.

The claims are directed to a composition and the language “for a direct methanol fuel cell” is an intended use for the composition and is not read as a patentable limitation. Note that, if the body of a claim fully and intrinsically sets forth all of the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention’s limitations, then the preamble is not considered a limitation and is of no significance to the claim construction. See MPEP 2111.02. The examiner asserts that Mayerhoffer contains the same components as recited by the instant claims and thus, anticipates the claims.

Applicant argues that JP does not teach an additive added to methanol in such an amount as to undergo a reaction with water to produce molecules that are easily electro-oxidized.

JP teaches the same components in amounts that anticipate the claimed ranges. If the additive of the present invention undergoes a reaction with water, then the additives of JP would perform this same function.

Applicant argues that Zhang requires recirculation loops and does not teach a direct methanol fuel cell.

The claims are directed to a composition and the language “for a direct methanol fuel cell” is an intended use for the composition and is not read as a patentable limitation. Note that, if the body of a claim fully and intrinsically sets forth all of the limitations of the claimed invention, and the preamble merely states, for example, the



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purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention's limitations, then the preamble is not considered a limitation and is of no significance to the claim construction. See MPEP 2111.02. The examiner asserts that the fuel composition of Zhang renders obvious the present invention.

12. Claims 5, 9, and 17 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art fails to teach or suggest the fuel composition comprising sulfonated activated carbon particles.

13. Claims 12 and 13 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art fails to teach or suggest the fuel composition comprising tetramethylortho carbonate and an indicating dye.

14. Claims 18 -21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art fails to teach or suggest that the additive is tetramethyl ortho silicate or this additive with an indicating dye.

15. Claim 32 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art fails to teach or suggest the fuel composition comprising methanol, the selected additive and at least one metal hydride.

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16. Claim 24 is allowable because the prior art fails to teach the claimed fuel composition comprising methanol, the selected additive and sulfonated activated carbon particles.

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

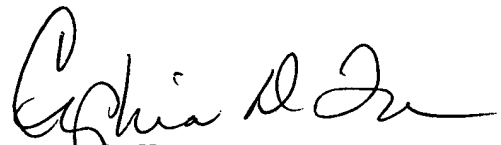
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cephia D. Toomer whose telephone number is 571-272-1126. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Cephia D. Toomer  
Primary Examiner  
Art Unit 1714

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